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TITLE: SEMICONDUCTOR DEVICE AND FABRICATION THEREOF

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ABSTRACT:

PROBLEM TO BE SOLVED: To ensure high speed operation by an arrangement wherein an active layer comprises a pixel matrix circuit, a driver circuit and a logic circuit, a plurality of TFTs have a specified subthreshold coefficient and a channel forming region is a laterally grown region having a growth distance dependent on the characteristics required by the circuit.

SOLUTION: A semiconductor device comprises a TFT (having a subthreshold coefficient of 60-100mV/decade) having a crystalline silicon active layer having a peculiar crystal structure where the structure of crystal lattice extends continuously in a substantially specified direction and a plurality of rod-like crystals are grown in parallel with each other while having directivity. An underlying layer 202, an amorphous silicon layer 203, a buffer layer 204 and a resist layer 205 are formed on the substrate 201 and only a region to be added with a catalyst element is removed. Quantity of the catalyst element is varied by ion implantation and a lateral growth region is formed while varying the channel length by each circuit, thus achieving high speed operation.

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